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SemaConnect

October 30, 2018

The Honorable Jocelyn G. Boyd
Chief Clerk/Administrator
The Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, SC 29210

Re: SUPPORT for Duke Energy Proposed Electric Transportation Pilot
Docket numbers: 2018-322-E and 2018-321-E

Dear Ms. Boyd:

SemaConnect, a national manufacturer of smart, networked Level 2 electric vehicle (EV) charging stations, respectfully submits these comments in support of Duke Energy's above-referenced Electric Transportation Pilot.

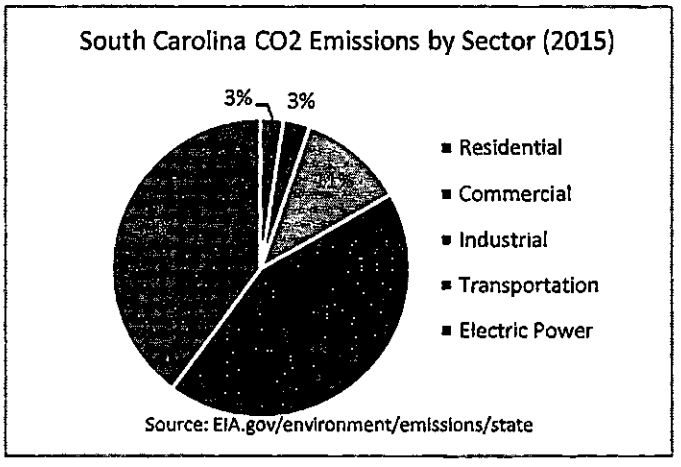
This letter makes two primary points:

1. Rapid electrification of our transportation sector is imperative to improve air quality in South Carolina, and EV charging is essential to accomplish that.
2. Doing so will require an all-hands-on-deck approach in which public utilities have a critical role.

Emissions and Air Quality

In 2016, transportation dethroned electricity generation to claim the dubious distinction as the highest polluting sector in our nation's economy. In fact, transportation was the only consumption sector where carbon emissions increased. It now accounts for more than one-fourth of all U.S. greenhouse gas (GHG) emissions.

In South Carolina, the situation is similar but transportation accounts for an even larger share—almost half—of carbon emissions statewide. It's not just CO2; transportation also accounts for the top three NOx-polluting sectors as well. The single biggest NOx-polluting category is "on-road non-diesel light duty vehicles;" this is the very sector that Duke Energy's Electric Transportation Pilot will address by accelerating the shift of light-duty vehicles from combustion engines to EVs.



In other words, the data is clear: decarbonizing South Carolina's transportation sector is the single most effective way for the state to achieve cleaner and healthier air. And to do that, South Carolina needs to electrify transportation for the simple reason that EVs emit far less pollution than gas-powered vehicles. A recent Union of Concerned Scientists (UCS) report confirmed that even after taking into account EVs' more electricity-intensive manufacturing process, battery electric vehicles (BEVs) produce less than half the GHG emissions as comparable gas-fueled cars over their full life cycle.

What's more, EVs actually get cleaner over time: as a utility incorporates more solar, wind and other carbon-free sources into its generation mix, each EV it charges will become cleaner as well. This is especially true in a state like South Carolina in which carbon-free nuclear, hydroelectric and solar power account for more than half of its electricity generation.

Infrastructure

Charging infrastructure is the sine qua non—the essential ingredient—necessary to move EV adoption beyond the early adopters and into the mainstream. Drivers of gas vehicles take for granted their ability to fill up with fuel wherever they go, because gas stations have spread like wildfire since the first "filling station" opened in Pittsburgh in 1905. On the other hand, EV charging stations are sparsely distributed and often inaccessible to the public.

In announcing the proposed pilot, Duke Energy's Lang Reynolds stated, "lack of charging stations is commonly cited as a barrier to purchasing an EV." Numerous industry press reports and studies echo this: the Financial Times reports the "relative lack of charging infrastructure" holds back widespread adoption of EVs. The International Energy Administration (IEA) also reports:

> "Charging infrastructure, whether at home, at work or at public locations, is indispensable for operating EVs... the availability of chargers [is] one of the key factors for contributing to the market penetration of EVs." (emphasis added)

The International Council on Clean Transportation (ICCT) conducts extensive technical and scientific analysis of the often-inter-related factors impacting electric transportation. In a white paper released last year, ICCT examined 350 metropolitan areas globally and found—not

surprisingly—that "public charging infrastructure is a key to growing the [global] electric vehicle market" (emphasis added). ICCT followed up that research by focusing on the U.S.—specifically the 50 most populous U.S. metropolitan areas—and released those results this past summer:

> "Electric vehicle adoption and various types of charging infrastructure grow in unison. Public regular, public fast, and workplace charging are each linked with electric vehicle market uptake. These relationships remain complex and multidirectional: Infrastructure increases electric vehicle awareness and driver confidence, and more electric vehicle users increase demand for infrastructure."

State context

In South Carolina, the need for more public charging stations is clear. According to the U.S. Department of Energy's Alternative Fuels Data Center, South Carolina currently has 222 publicly accessible Level 2 and DC Fast Charge charging locations totaling 459 Level 2 charging ports statewide. This equates to only one publicly accessible charging port for every 4,006 households.

This severe lack of publicly-available charging infrastructure is symptomatic of a broader market failure: private investment alone has been inadequate to meet the need for publicly-available charging, and this in turn has hindered EV adoption. Public sector leadership and action—such as the Electric Transportation Pilot proposed by Duke Energy—is sorely needed.

Utility leadership

Utilities have a critical role to play in advancing vehicle electrification. For one thing, the business case does not yet exist for private companies to deploy charging stations at scale; there simply aren't enough EVs yet to provide a return on investment. Even efforts that stem from the Volkswagen diesel settlement such as Electrify America (EA)'s infrastructure investment plan and South Carolina's Appendix D Beneficiary Mitigation Plan, will provide only a fraction of what's needed; EA's CEO estimated its network would provide a mere 10 percent of what the country needs.

Utilities are uniquely positioned to deploy and manage the stations. What other entity already has an established service territory that connects electric service to every property, a fleet of field technicians, and trusted—often generational—relationships with its customers? And once the stations are deployed, who will manage their impact on the grid? The technical capacity of utilities is ideally suited to addressing the emerging challenges that arise from EV charging on a mass scale; these include managing electricity supply and demand and keeping prices down for all ratepayers, not just the EV drivers.

Two components of Duke Energy's proposed pilot program speak directly to this load management role: its Residential EV Charging Program and the DC Fast Charging Program. For the residential program the customer will own the charging station; for the fast charging program the utility will. But both programs share a key characteristic: Duke Energy will manage the stations, with will enable it to track usage and manage load in the aggregate. Today, this Pilot is contemplating only a few hundred charging stations, but it won't be long before the state and Duke Energy are faced with managing the grid impact from tens of thousands of charging stations. The experience and insights that Duke Energy gains from this Pilot Program will be invaluable to help both it and the PSC walk before they have to run, so to speak.

Other considerations

Our country is still in the very early stages of transportation electrification: battery and plug-in EVs comprise just 1 percent of car sales nationally and less than 1 percent in South Carolina; EV charging companies are taking different approaches with their business models; and prospective buyers often have little to no awareness about how and where to charge. In this evolving context, *how* Duke Energy and South Carolina decides to procure and deploy EV charging infrastructure is arguably as important as *how much* they invest. The right approach can not only future-proof Duke Energy's investments, it can accelerate greater EV adoption by providing drivers with a more customer-friendly charging experience.

To help guide EV charging policy and investment decisions, a broad coalition of industry stakeholders has established a set of guiding principles called the Transportation Electrification Accord. SemaConnect is a signatory to the Accord and recommends it for the PSC's consideration. Its principles include the following:

- Open standards and interoperability: public sector- and utility-provided EV charging infrastructure should be based on platforms of open standards and interoperability. This will create a better experience for EV drivers, who will be able to charge up without needing to subscribe to a proprietary charging platform. In addition, it will help future-proof ratepayer-funded investments by minimizing risk of vendor lock-in.

- Open data: utilities, drivers, charging companies and the PSC itself are all in the same boat in that none of us know with certainty how EV usage and charging will evolve, and how it will impact our economy, transportation sector and electric grid. We all will benefit from sharing information and learning from each other's experiences. In this vein, utility investments should incorporate robust data collection and reporting; make the anonymized data publicly accessible; and use it to analyze charging patterns, identify infrastructure gaps, and inform future investment decisions.

- Smart Infrastructure: EVSE functionality is advancing rapidly, as are the expectations of EV drivers. It makes little sense to invest in equipment that will be obsolete shortly after it is installed. For drivers, this means that utility investments should embrace the future and allow drivers to manage their charging remotely, much like we can control our home environment on our smartphone with cloud-based smart thermostats. For the utilities, this means anticipating and ensuring support for Vehicle-Grid Integration (VGI) and Vehicle-To-Grid (V2G) capabilities.

About SemaConnect

An American success story, SemaConnect is a Maryland-based provider of smart, networked Level 2 electric vehicle (EV) charging stations. Our company exemplifies the economic promise of vehicle electrification: our founder Mahi Reddy started SemaConnect in 2008 when mass market EVs were still just a dream. It its early years, the company's initial focus was designing a charging solution to meet the coming demand. In 2011 we deployed our first charging station as the first EVs were hitting dealer showrooms. Now, just seven years later, SemaConnect has deployed over 5,000 charging stations across North America. We employ more than two dozen professionals who design, assemble, distribute and service our products in Maryland.

SemaConnect's flagship product, the Series 6 Smart EV Charging Station, is integrated with our cloud-based network. Our platform is based upon open standards and interoperability, and supports the latest protocols such as Open Charge Point Protocol (OCPP) and Automated Demand Response (ADR). This approach, combined with our robust back-end functionalities that include data analytics and reporting, make our charging solution ideal for public utilities and other entities that want to manage and operate their own charging networks.

In summary, SemaConnect strongly supports Duke Energy's proposed Electric Transportation Pilot and respectfully recommends favorable adoption by the PSC. Thank you for your consideration of these comments, and please do not hesitate to contact me if I can provide additional information or answer any questions.

Sincerely,

Josh Cohen
Director of Policy and Utility Programs